

and 43° at Breckenridge. Missouri valley, 32° at Leavenworth, 39° at Yankton and Bismarck to 43° at Ft. Buford. Texas, 30° at Denison and Rio Grande City to 45° at Concho. Eastern Rocky Mountain slope, 35° at Ft. Gibson to 44° at Dodge City, 49° at Ft. Elliott and 52° at North Platte. Middle Plateau District, 29° at Pioche, 32° at Boise City and Salt Lake City, to 42° at Winnemucca. California, 20° at San Francisco, 30° at Sacramento and Visalia to 33° at Los Angeles and 37° at Red Bluff.

Frost—has generally prevailed to the 31st along the entire Rocky Mountain Slope southward to latitude 35° and eastward to the Atlantic ocean; southward of that parallel the following cases are reported: Near Mayport, Fla., light on the 30th; Savannah, Ga., light on the 30th and 31st, slightly injuring plants in low places; Augusta, Ga., 25th, 26th, 30th, 31st, heavy frost, damaging gardens; Clarksville, Tex., 14th to 17th, materially injuring corn, fruit and garden vegetables; 14th to 17th, New Ulm and Austin, Tex.; Mesquite, 13th to 15th, killed corn planted in February, destroyed all early fruits; Melissa, Tex., 14th, 15th, gardens injured; Aiken, S. C., 31st; Mississippi, 17th, near Fayette; Quitman, Ga., 31st, light on low grounds; Gainesville, Ga., 17th, 23rd, 24th, and on 30th, 31st, killing beans and tomato tops; Houston, Fla., 29th, 30th; Green Spring, Ala., 17th, 30th. On the Pacific coast frost was frequent to end of month in the northern half—in California it has been reported as follows: Salinas City, frequent; Mt. St. Helena, 4th, (8th, hardy orange trees killed to the ground, other trees seriously injured;) Lompoc, frequent. Pt. San José, 13th, 15th; Caliente, 25th, freezing Eucalypti trees; at Charleston, S. C., 30th, slightly injuring garden vegetables; at Charlotte, N. C., 31st, injuring fruit trees and vegetables; Atlanta, Ga., 17th, 29th; Texas, Fredericksburg, 10th to 19th, killing all vegetables and injuring wheat badly; Boerne, 14th to 16th, very severe, doing considerable damage to vegetation; San Antonio, 16th, seriously damaging fruit and crops; Uvalde, 15th; Brackettsville, 16th, killing all vegetables; Pilot Point, 15th, damaging vegetables and fruit; Concho, 16th; Castroville, 13th, 16th, injuring fruit and crops; Montgomery, Ala., 29th, 30th, in country near; Little Rock, Ark., 17th; Indianola, Tex., 15th, 16th.

Ice—was general north of parallel 37°. In North Carolina, at Weldon, 23rd; Lenoir, 25th, 31st; Statesville, 25th, 30th; Charlotte, 30th; in Tennessee, at Ashwood, 25th; Texas, Melissa, 14th, 15th; Austin, 14th to 17th; Castroville, 15th; San Antonio, 16th, $\frac{1}{2}$ inch thick. California: Pt. San José, 13th; San Francisco, 4th, sidewalks frozen, 12th, 29th; Sacramento, 15th; Los Angeles, 16th. Georgia: Augusta, 31st.

PRECIPITATION.

The general distribution of the rain-fall, including melted snow, for March, 1880, is illustrated upon chart No. III, as accurately as possible from about 500 reports. This chart shows the area of maximum precipitation over Tennessee, northern Mississippi, Alabama and northwestern Georgia. The minimum precipitation in amounts less than one inch fell over the Plateau, the Rocky Mountain districts, a portion of the central Missouri and the greater part of the Missouri valley. In the left-hand corner of the same chart will be found a table of average rain-falls for the month of March. Large excesses over the average for the present month are reported from the Gulf States and Tennessee, and a slight excess from the Middle Atlantic States, and the South Pacific coast region. From all other districts differences are reported, being small except in New England, Lower Missouri valley, the North and Middle Pacific coast regions.

Unusually Heavy Rains.—2nd, Denison, Tex., 2.01 inches in 10 hours and 20 minutes; Messina, Tex., 2.00 in. in 14 hours. 3rd, Memphis, 1.28 in. in 8 hours; Little Rock, Ark., 2.15 in. in 8 hours. 3rd, Franklin, N. C., 2.60 in. in 22 hours; Chattanooga, Tenn., 2.17 in. in 16 hours. 4th, Highlands, N. C., 2.70 in. in 21 hours; Duluth, 0.98 in. (melted snow) in 4 hours and 15 minutes. 7th, Austin, Tenn., 2.18 in. in 11 hours. 8th, New Orleans, 2.81 in. in 8 hours; Galveston, 1.24 in. in 8 hours; Cape Henry, Va., 1.02 in. in 8 hours; Fayette, Miss., 2.80 in. 9th, Gainesville, Ga., 8th, 9th, 2.65 in. in 22 hours; Mobile, 3.49 in. in 8 hours; Montgomery, 1.34 in. in 8 hours; Charlotte, N. C., 1.69 in. in 8 hours. 10th, Point Pleasant, La., 2.51 in.; Green Springs, Ala., 10th, 11th, 1.97 in. in 18 hours; Forsyth, Ga., 10th, 11th, 3.10 in. in 25 hours. 11th, Little Rock, Ark., 2.11 in. in 16 hours; Corsicana, Tex., 1.58 in. in 8 hours; Vicksburg, 10th, 11th, 2.27 in. in 16 hours; Augusta, 1.53 in. in 8 hours; Denison, Tex., 1.20 in. in 8 hours; Point Pleasant, La., 3.00 in.; Mt. Ida, Ark., 3.20 in. in 22 hours; New Ulm, Tex., 10th, 11th, 3.75 in. Atlanta, 1.02 inches in 8 hours; Melissa, Tex., 2.00 in. in 9 hours; 11th, 12th, Statesville, N. C., 3.10 in. in 18 hours; Ashwood, Tenn., 2.75 in. in 24 hours. 12th, Nashville, 2.78 in. in 16 hours; Memphis, 2.75 in. in 8 hours; Atlanta, 1.13 in. in 8 hours; Austin, Tenn., 2.74 in.; Gainesville, Ga., 13th to 16th, 5.72 in. in 82 hours. 13th, Montgomery, 1.52 in. in 8 hours; Franklin, N. C., 14th to 16th 4.10 in. 14th, Ft. Barrancas, Fla., 2.48 in. in 9 hours. 15th, Chattanooga, 1.83 in. in 8 hours; Knoxville, 1.05 in. in 8 hours; Vicksburg, (14th, 15th,) 4.63 in.; Pensacola, Fla., 1.25 in. in 7 hours; Point Pleasant, La., (14th, 15th,) 5.01 in. in 37 hours; Austin, Tenn., 2.80 in. 16th, Highlands, N. C., 2.55 in.; Montgomery, Ala., 1.67 in. in 6 hours; Pensacola, Fla., 1.64 in. in 6 hours and 20 minutes; Green Springs, Ala., 14th to 16th, 4.95 in.; Ft. Barrancas, Fla., 2.09 in. in 10 hours; Atlanta, 1.32 in. in 8 hours. 18th, Point Pleasant, La., 2.00 in. in 8 hours; Shreveport, 1.40 in. in 6 hours; Fayette, Miss., 2.10 in. 19th, Forsyth, Ga., 2.90 in. in 8 hours; Augusta, 1.71 in. in 6 hours; Smithville, 1.22 in. in 8 hours; Chincoteague, Va., 1.43 in. in 8 hours; Cape Lookout, N. C., 1.73 in. in 8 hours; Portsmouth, N. C., 1.82 in. in 6 and one-half hours. 21st, New Ulm, Texas, 2.50 in. in 12 hours; Galveston, 1.70 in. in 8 hours; Castroville, Tex., 1.18 in. in 14 hours. 26th, New Corydon, Ind., 26th, 27th, 2.29 in. in 17 hours; Fort Leavenworth, Kan., 1.60 in. in 6 and one-half hours. 27th, Cleveland, Ohio, 0.50 in. in 12 minutes; Detroit, 1.20 in. in 8 hours; Indianapolis, 2.27 in.; Chincoteague, Va., 1.43 in. in 8 hours; 31st, Denison, Tex., 1.10 in. in 4 hours.

Largest Monthly Rain-falls, including melted snow.—Point Pleasant, La., 13.16 in.; McPherson Barracks, Ga., 12.46 in.; Franklin, N. C., 12.40 in.; Chattanooga, Tenn., 12.16 in.; Highlands, N. C., 12.00 in.; Atlanta, Ga., 11.87 in.; Gainesville, Ga., 11.75 in.; Murphy, N. C., 11.70 in.; Vicksburg, Miss., 11.23 in.; Green Springs, Ala., 10.76 in.; Cape Henry, Va., 10.72 in.; Austin, Tenn., 10.38 in.; Forsyth, Ga., 10.14 in.; Statesville, N. C., 9.90 in.; Charlotte, N. C., 9.57 in.; Princeton, Cal., 9.50 in.; Mobile, Ala., 9.41 in.; Montgomery, Ala., 9.26 in.; New Ulm, Tex., 9.13 in.; Memphis, Tenn., 8.82 in.; Fayette, Miss., 8.60 in.; Knoxville, Tenn., 8.59 in.; Ashwood, Tenn., 8.50 in.; Nashville, Tenn., 8.16 in.

Smallest Monthly Rain-falls, including melted snow.—Fort Abraham Lincoln, Dak., and Wickenburg, Ariz., trace; Fort Wallace, Kan., 0.02 in.; Punta Rassa, Fla., 0.03 in.; Dodge City, Kan., 0.04 in.; Cheyenne, Wyoming, 0.06 in.; Fort Union, N. M., 0.08 in.; Prescott, Ariz., and Socorro, N. M., 0.11 in.; Pioche, Nev., 0.12 in.; Vail Ia., 0.14 in.; Stockton, Tex., Mammoth Tank, Cal. and Santa Fé, N. M., 0.15 in.; North Platte, Neb., 0.18 in.; Whitewater, Cal., 0.20 in.; Fort Buford, Dak., and Denver, Col., 0.21 in.; Tulare, Cal., 0.24 in.; Howard, Neb., 0.26 in.; Browns, Cal., 0.27 in.; El Paso, Tex., and Fort Verde, Ariz., 0.30 in.; Clear Creek, Nebr., and Pembina, D. T., 0.32 in.; Umatilla, Or., and Fort Fetterman, Wyoming, 0.35 in.; Fort Custer, Dak., 0.36 in.; Winnemucca, Nev., 0.37 in.; Fort Collins, Col., 0.38 in.

Rainy Days.—The days on which rain or snow has fallen, varies as follows: New England, 15 to 24; Middle Atlantic States, 14 to 20; South Atlantic States, 8 to 20; Eastern Gulf States, 4 to 16; Western Gulf States, 12 to 14; Lower Lake region, 13 to 22; Upper Lake region, 8 to 18; Ohio valley and Tennessee, 14 to 21; Upper Mississippi valley, 8 to 17; Missouri valley, 3 to 11; Red River of the North valley, 5 to 6; Eastern Rocky Mountain Slope, 1 to 11; Texas, 2 to 16; Rocky Mountains, 2 to 10; Middle and Southern Plateaux, 3 to 15; California, 5 to 9; Oregon, 17 to 19.

Cloudy Days.—The number varies in New England from 9 to 17; Middle Atlantic States, 9 to 17; South Atlantic States, 3 to 19; Eastern Gulf States, 0 to 15; Western Gulf States, 13 to 17; Lower Lake region, 11 to 15; Upper Lake region, 6 to 15; Ohio valley and Tennessee, 12 to 17; Upper Mississippi valley, 6 to 11; Missouri valley, 2 to 11; Red River of the North valley, 9 to 12; Eastern Rocky Mountain Slope, 3 to 13; Texas, 11 to 20; Rocky Mountains, 1 to 9; Middle Plateau, 0 to 12; California, 2 to 6.

Hail.—California: Mt. St. Helena, 24th, 28th; Princeton, 24th. San Diego, 25th, size of pea; Sacramento, 3rd; Red Bluff, 3rd, 27th; Salinas, 3rd; Visalia and Point San José, 3rd, 25th; Camp Sheridan, Neb., 5th. Illinois: Rockford, 4th; Mt. Sterling, 4th, 5th. Indiana: Vevay, 5th, 25th; Logansport, 23rd; Spiceland, 4th. Iowa: Nora Springs, 3rd, 23rd; Ft. Madison and Independence, 25th; Monticello, 25th, 26th; Cresco and Fort Dodge, 31st. Kansas: Leavenworth, 26th; Yates Center, 7th; Holton, Lawrence, Independence, Cedar Vale and Wellington, 26th; at latter place very large, some stones 1½ to 2 inches in diameter. Massachusetts: Fall River, 16th. Missouri: Oregon, 24th; Corning, 26th. Nebraska: De Soto, 25th. New Jersey: Princeton, 28th. New York: Ft. Niagara, 5th; Starkey, 11th; North Carolina: Weldon, 12th; False Cape, 30th. Ohio: North Lewisburg, 4th; Norwalk, 5th, Jacksonburg, 10th, 15th, 26th; Cincinnati, 11th; Bellefontaine, 4th, 27th; Wooster and Ringgold, 27th; at latter place covering ground, of all shapes and sizes. Pennsylvania: Dyberry, 25th. Vermont: Woodstock and Lunenburg, 5th. Virginia: Walnut Grove, 28th, 30th, 31st; Cape Henry and Norfolk, 28th. Idaho: Boise City, 11th. Oregon: Portland, 11th, 25th; Umatilla and Roseburg, 25th; Washington Territory: Dayton, 3rd. Dakota: Ft. Yates, 26th, 27th. Texas: Denison, 31st; Galveston, 21st. Vermont: Burlington, 5th. Wisconsin: La Crosse, 25th, 26th. Kentucky: Louisville, 5th. Georgia: Atlanta, 27th.

Snow—fell frequently in the northern half of the country to the end of the month. At points of special interest it fell as follows: On summit of Mt. Diablo, Cal., 4th, 5th; Ft. Union, N. M., 1st to 21st; Portland, Or., 1st to 16th; La Cruces, N. M., 15th, 18th; McKavett and Uvalde, Tex., 14th; False Cape, N. C., 30th; Augusta, Ga., 12th, light spits; Lynchburg, Va., 12th; Melissa and Mesquite, Tex., 15th.

Largest Monthly Snow-fall in Inches.—California: Summit, 89; Cisco, 76; Truckee, 46.5; San Geronio, 13.5; Mt. Washington, N. H., 48.7; South Lee, Mass., 35; Pike's Peak, 27.9; Oswego, 25.9; Alta, Cal. and Newport, Vt., 19; Duluth, Mich. and Springfield, Mass., 18.3; Westborough, Mass., 17.5; Flushing, N. Y., and Dunbarton, N. H., 16; Somerset and Rowe, Mass., Freehold, N. J., 55; Southington and Grafton, N. H., 15; Fall River, Mass. and Escanaba, Mich., 14; Antrim, N. H., and Neillsville, Wis., 13.

Snow on Ground at end of Month.—On summit of Mt. Washington, 24 to 36 inches; on summit of Pike's Peak, 4 inches; Westborough, Mass., 3 inches; Auburn N. H., 1 inch;

Rain and Snow from a Cloudless Sky.—Las Cruces, N. M., 18th, snow; Oswego, N. Y., 15th, snow; Woodstock, Vt., 6th, rain.

RELATIVE HUMIDITY.

The percentages of mean relative humidity for the month range as follows: New England, 62 to 84; Middle Atlantic States, 60 to 73; South Atlantic States, 63 to 78; Eastern Gulf States, 68 to 75; Western Gulf States, 67 to 84; Ohio valley and Tennessee, 57 to 74; Lower Lake region, 66 to 72; Upper Lake region, 61 to 76; Upper Mississippi valley, 59 to 70; Missouri valley, 60 to 82; Red River of the North valley, 90 and 91; Eastern Rocky Mountain Slope, 46 to 64; Texas, 44 to 75; Western Plateau, 36 to 62; California, 46 to 74; Oregon, 72 to 80. *High stations* report the following averages not corrected for altitude: Mt. Washington, 87.8 per cent.; Cheyenne, 42.0; Denver, 40.4; Virginia City, 58.0; Santa Fé, 41.6; Pike's Peak, 65.5.